

CLIMATE NEWS

From Sheldon Whitehouse, Barbara Boxer, and Jeff Merkley

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With Few Hard Frosts, Florida's Tropical Mangroves Push North



Cold-sensitive mangrove forests have expanded dramatically along Florida's Atlantic Coast as the frequency of hard frosts has declined, according to a new study based on 28 years of satellite data from the University of Maryland and the Smithsonian Environmental Research Center. Unlike many studies which focus on changes in average temperatures, this study shows that changes in the frequency of rare, severe events can determine whether landscapes hold their ground or are transformed by climate change. The mangroves' march up the coast as far north as St. Augustine, Florida, is a striking example of one way climate change is affecting nature. Rising temperatures lead to new patterns of extreme weather, which in turn cause major changes in plant communities. "Some people may say this is a good thing, because of the tremendous threats that mangroves face," said lead author Kyle Cavanaugh. "But this is not taking place in a vacuum. The mangroves are replacing salt marshes, which have important ecosystem functions and food webs of their own."

(ScienceDaily/pnas.1315800111)

Planet Likely to Warm 4°C by 2100, New Study Warns

Temperature increases resulting from unchecked carbon emissions will be at the severe end of projections, according to a new study published in *Nature*. Lead author Steven Sherwood, a professor at Australia's University of New South Wales, said that unless greenhouse gas emissions are cut, the planet will heat up by a minimum of 4°C by 2100, which is twice the level the world's governments have deemed dangerous. The research indicates that fewer clouds form as the planet warms, meaning less sunlight is reflected back into space, thus driving up temperatures even further. "This study breaks new ground twice: first by identifying what is controlling the cloud changes and second by strongly discounting the lowest estimates of future global warming in favor of the higher and more damaging estimates," Dr. Sherwood said. The effect of clouds has been one of the biggest mysteries surrounding predictions of climate change. When water evaporates from the oceans, the vapor can rise over nine miles to form rain clouds that reflect sunlight, or it may rise just a few miles and drift back down without forming clouds. Climate models that encompassed both of these processes predicted significantly higher future temperatures than those which only included the nine-mile-high clouds. (*The Guardian/nature12829*)

Deep Sea Creatures at Risk Due to Climate Change

A new study predicts catastrophe for deep-sea marine life—a stark warning that even our planet's most remote ecosystems are not immune from the dangers of climate change. The study, led by the United Kingdom's National Oceanography Centre and published in the journal *Global Change Biology*, used various climate models to predict changes in food supply throughout the world's oceans. The researchers then looked at the relationship between food supply and biomass. The models predict a 38 percent decline in seafloor-dwelling marine life in the North Atlantic, and 5 percent globally, by 2100. The models suggest that more than 80 percent of all identified key seafloor habitats—including cold-water coral reefs, seamounts, and canyons—will suffer losses in total biomass. The scientists also predict that marine organisms will get increasingly smaller. "We were expecting some negative changes around the world, but the extent of changes, particularly in the North Atlantic, were staggering," said lead author Daniel Jones. "Globally we are talking about losses of marine life weighing more than every person on the planet put together." (*Discovery/gcb.12387*)

Cattle Slaughtered, Bush Fires Blaze in Australian Heat Wave

After enduring its hottest year on record in 2013, Australia is now battling a blistering heat wave. Across the country, firefighters are battling bush fires, and last week health warnings were issued in some of the biggest cities as the heat wave moved east. Hardest hit is the outback, where temperatures have soared and cattle farmers in Queensland—which accounts for 50 percent of the national herd—face calamitous effects. Temperatures as high as 104°F have depleted water supplies and withered feed crops in vital agricultural regions, leaving farmers no choice but to slaughter their livestock. "Water supplies are fast diminishing, and whatever feed supplies that were left are cooking off to the point where there won't be any left," said Charles Burke, a beef farmer and CEO of a Queensland cattle industry group. Due to the rise in slaughtering, Australia's cattle herd will be reduced to 25 million during the 2013-2014 season, the lowest it has been since 2009-2010, according to the Australian Bureau of Agriculture and Resource Economics and Sciences. (*ClimateWire*)

